beings and they should be stopped immediately."

Even the broadsheet newspapers purveyed elements of sensationalism, while demolishing it in the same article. *The Daily Telegraph*, for example, highlighted "designer babies" in a report and headline on the Newcastle work, based on the idea of preventing the transmission of defective mitochondrial genes.

Yet the article then used helpful comparisons to repudiate the nightmare of designer babies. "These mitochondrial genes make and run the chemical 'batteries' that power body cells," wrote science editor Roger Highfield. "In effect, the new technique would be like changing a battery in a computer without affecting the hard disc." He also quoted Newcastle researcher John Burn: "I would use the analogy of simply replacing the battery in a pocket radio…You are not altering the radio at all, just giving it a new power source."

The *Daily Express*'s approach to the work mirrored that of *Daily Mail* (though it did hedge its bets by asking "Is this a grotesque Frankenstein experiment?" rather asserting as much). In contrast, *The Guardian, The Independent* and *The Times* were conspicuous in running clear, cool descriptions of the technique. Judiciously, *The Guardian* concluded with two, opposing comments. Virginia Bolton from Guy's Hospital, London, pointed out that this was "yet another example of the value of human embryo research to establish the safety of a technique before it is introduced into clinical practice." According to Ms Quintaville, however, the HFEA was "turning this country into the wild west. Whenever they see a law, they jump through it. Babies don't need two mothers."

Anyone who believes that tabloid newspapers are irretrievably wedded to inaccuracy and hype might be pleasantly reassured by the *Daily Mirror*'s account of the Newcastle strategy. "Scientists won permission yesterday to create a human embryo that will combine genetic material from two mothers," its report read. "They will transfer the material created when one woman's egg and a man's sperm fuse – called pro-nuclei – into another woman's unfertilised egg.

"The work…aims to find a way of preventing mothers passing on so-called mitochondrial diseases to their unborn babies. The diseases are caused by mitochondrial genes — a small set of genes outside the nucleus that can affect more than 50 inherited diseases. The heart, brain, kidney, skeletal muscles, liver and respiratory systems are most susceptible…About one in 4000 children born each year will develop a mitochondrial disease by the age of 10."

Compare this in tone with the *Daily Express*'s treatment of the parthenogenesis work. Under the headline "Virgin birth row over new clone", the article began "Scientists sparked outrage yesterday after performing the first 'virgin conception' in Britain. In a move which critics condemned as Frankenstein science, they have created human embryos without any genetic material from a man." The account continued: "Campaigners warned that scientists were obscuring nature and trying to play God…Josephine Quintaville, of Comment on Reproductive Ethics, said the work was an outrage."

Only *The Times* really emphasised the principal purpose of the work. "Dr De Sousa said that the aim of the research was to generate embryonic stem (ES) cells so that their development could be studied," wrote science correspondent Mark Henderson. "Cells of parthenotes carry errors in the way genes are switched on and off, and as this is also a problem with cloned ES cells scientists are keen to investigate further….There is no intention to implant any parthenogenetic embryos in women's wombs."

Some scientists fail to realise that journalists have to use drama and colour to engage readers' interest in science. But as these two days illustrated all too vividly, those qualities are quite distinct from sensationalism and untruth.

Terror firmer

Efforts are growing on the part of research funders to identify quickly research topics that may offer new opportunities for terrorists. **Michael Gross** reports.

One year ago, Britain's Wellcome Trust and Royal Society co-organised a discussion meeting to assess the potential dangers arising from the misuse of published research results (e.g. for bioterrorism), and to explore ways in which the scientific community might be able to reduce this risk and alleviate fears. (Current Biology 2004, *14*, R905).

Now, the first results of the processes started off by that meeting have become apparent. In a joint statement and accompanying press releases, three of the main funding agencies for life science research in the UK have announced that they are adjusting their guidelines and processes to accommodate provision for misuse risks.

The Medical Research Council (MRC), the Biotechnology and Biological Sciences Research Council (BBSRC), both of which funnel the UK government's funds into research, and the Wellcome Trust, one of the largest research-funding charities, acknowledge the general public's concern about potential misuse of life science research. However, as BBSRC chief executive Julia Goodfellow warns, "This risk is not new, nor is it restricted to high tech areas of science." In many cases, terrorists have used low tech to devastating effect. Thus, measures tailored to block misuse of advanced technology can only have limited reach.

Colin Blakemore, the MRC chief executive, said: "Of course, such measures on their own will not prevent the efforts of a determined terrorist, but this is a positive step by the research community to raise awareness and reduce the risks."

In their joint statement, they emphasize their view that a system based on self-governance by the scientific community will be

the most effective way of limiting the risk.

Accordingly, the organisations have agreed to make changes in four areas:

* Application forms will require applicants to consider any risks of misuse linked to the proposed research.

* Guidance to referees will contain risk of misuse as a point that must be considered.

* Guidance for funding committees will be changed to include this issue, and to define procedures to be taken when a misuse risk is identified.

* Good practice guidelines of each organisation will be edited to address misuse possibilities.

Details of how to implement these changes will be left to the individual organisations. Each of them has issued a more detailed statement on their new policies on the misuse issue. The BBSRC, for example, pledges to pay specific attention to areas not yet included in existing regulations, including:

* Development of tools that might have a wide range of applications.

* Projects that are not suspicious by themselves, but might be combined with progress in other fields, resulting in new kinds of weapons.

The BBSRC has already set up a procedure under which any applications that have raised concerns under the misuse policy will be referred to the BBSRC office, and may be passed on to the council's bioscience for society strategy panel. But it emphasizes that "this process does not delay the funding or the start of the research."

However, misuse potential may only arise during the research project. The questions of whether or not to publish such work was hotly debated at last year's discussion meeting. But the agencies now back free communication. The BBSRC, for example, states it "would be very concerned by any measures that threatened communication of research results through publication." In agreement with the US National Academy of Sciences Committee, the UK organisations suggest that the dissemination of research results should continue to be based on the voluntary self-governance by the scientific community.

One last thorny issue that was raised in the discussions on this topic is the dissemination of knowledge by movement of research students or workers between countries. In some quarters, there are fears that people with undesirable intentions might sign up for doctoral or post-doctoral work in the leading scientific nations, and later apply the acquired knowledge to nefarious use. There have already been reports suggesting that scientists from a range of countries are now finding it more difficult to enter the US for research work.

But the BBSRC states that "it would be concerned by any extension of existing regulations that would disproportionately restrict the international exchange of materials and the ability of overseas scientists to work in the UK or for UK researchers to collaborate with researchers overseas."

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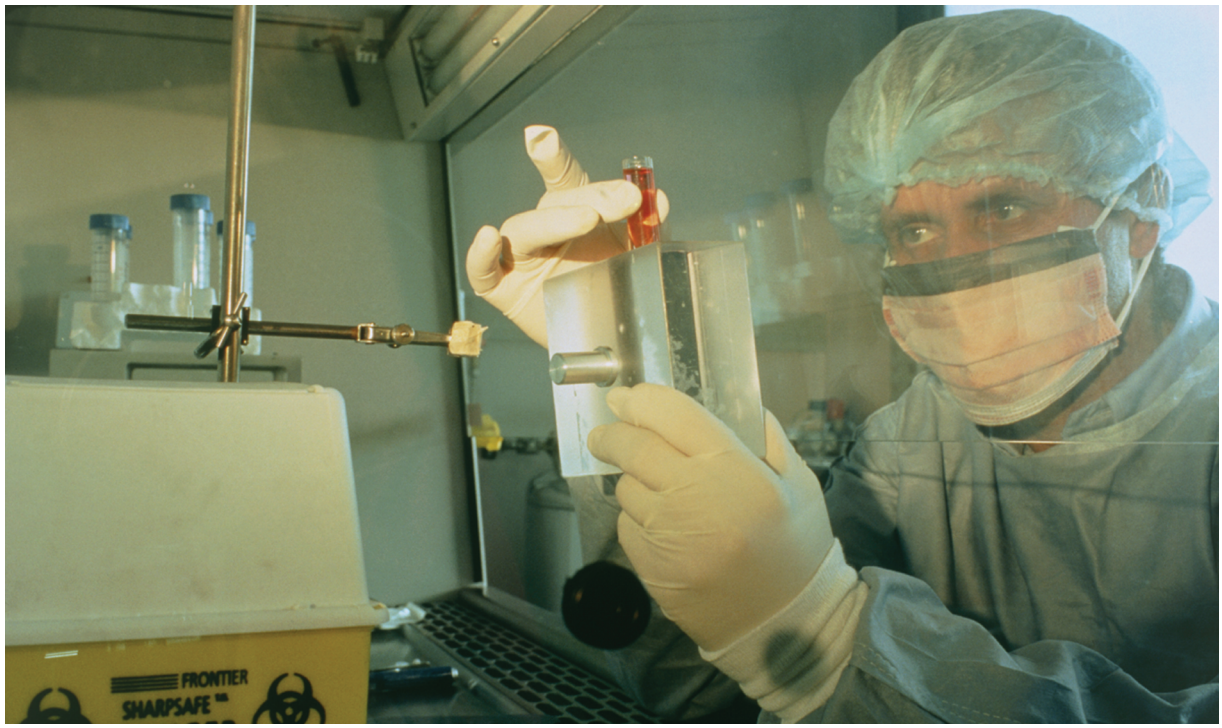

Biohazard: Research on materials known to be of a potential bioterrorism risk is well regulated but funding bodies are putting in place measures to monitor unexpected research developments that might be put to such use. (Photograph: Philippe Plailly/Eurelios/ Science Photo Library.)